Introduction of Device and Driver Support for Yokogawa F3RP71

Shuei YAMADA (KEK / J-PARC)
shuei@post.kek.jp
Outline

- F3RP71 (and F3RP61)
- Development and Runtime environment
- F3RP71 Device/Driver support
- Release Plan
F3RP71 (and F3RP61)

Linux CPU module for Yokogawa PLC (FA-M3 series)

- Successor of F3RP61
- 35-40 F3RP61 in operation @ J-PARC MR
- Evaluating one F3RP71
Development & Runtime Environment

- **Yocto + Xilinx SDK + F3RP71 Board Support Package**
  - Bootable SD card based on user-land by Yokogawa

- **Make use of Plain GNU toolchain + Makefile**
  - Cross development on Scientific Linux 6 (RHEL6 clone).

- **EPICS base, modules and IOC products located on NFS**
  - For easy replacement of CPU module

- **Available APIs for IO module access**
  - Library functions.
  - F3RP61 compatible ioctl(2) functions.
F3RP71 support

- Porting stated with F3RP61 v1.3.0
  - F3RP61 support originally developed by Odagiri-san (KEK)
  - F3RP61 v1.2.1 in operation at J-PARC MR

- (almost) source code compatible with F3RP61 support
  - Make use of F3RP61 compatible API
  - Minor modifications are needed in:
    - Macro for ioctl() request code
    - Path to header files
    - Device file for Ladder CPU

- A minimum test has been carried out
  - Blinking LEDs on DO module (F3WD64) thru caput.
  - More test is needed (DO, AI/ AO, Ladder CPU, …)

- Merging F3RP71 support with F3RP61 is desirable
Decisions to make:
- DTYP field, DBD name, library name, …
  - Use “F3RP61” for both 71 and 61
    - No need to modify db; Might be a bit confusing as DTYP for F3RP71
  - Introduce new DTYP, e.g., “eRT3” or “FAM3”
    - Need to modify EPICS db, Makefile, … etc.
  - Individual DTYP for each: “F3RP71” and “F3RP61”
    - Need to modify EPICS db, Makefile, … etc.

HOST-ARCH
- linux-f3rp71
  - F3RP61 uses linux-f3rp61
- linux-arm
  - May conflicts with other arm-based IOCs … ABI for 71 is armel

Reorganization of F3RP61 support is needed
- v1.3.0 … https://github.com/EPICS-F3RP61/epics-f3rp61
- v1.6.0 … http://www-linac.kek.jp/cont/epics/f3rp61

NIC hangs up on heavy network traffic
- Expecting a bug-fixed kernel by August
- Close contact with Yokogawa
Summary

- Device support for F3RP71 was ported from F3RP61
- A minimum test has been carried out
- Release data TDB